



SEQUENCE LISTING

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Caron, Marc G.

<120> Modified G-Protein Coupled Receptors

<130> 033072-026

<140> US 09/993,844
<141> 2001-11-05

<150> US 60/245,772
<151> 2000-11-03

<150> US 60/260,363
<151> 2001-01-08

<160> 82

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 371
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of wild-type V2R

<400> 1
Met Leu Met Ala Ser Thr Thr Ser Ala Val Pro Gly His Pro Ser Leu
1 5 10 15
Pro Ser Leu Pro Ser Asn Ser Ser Gln Glu Arg Pro Leu Asp Thr Arg
20 25 30
Asp Pro Leu Leu Ala Arg Ala Glu Leu Ala Leu Ser Ile Val Phe
35 40 45
Val Ala Val Ala Leu Ser Asn Gly Leu Val Leu Ala Ala Leu Ala Arg
50 55 60
Arg Gly Arg Arg Gly His Trp Ala Pro Ile His Val Phe Ile Gly His
65 70 75 80
Leu Cys Leu Ala Asp Leu Ala Val Ala Leu Phe Gln Val Leu Pro Gln
85 90 95
Leu Ala Trp Lys Ala Thr Asp Arg Phe Arg Gly Pro Asp Ala Leu Cys
100 105 110
Arg Ala Val Lys Tyr Leu Gln Met Val Gly Met Tyr Ala Ser Ser Tyr
115 120 125
Met Ile Leu Ala Met Thr Leu Asp Arg His Arg Ala Ile Cys Arg Pro
130 135 140
Met Leu Ala Tyr Arg His Gly Ser Gly Ala His Trp Asn Arg Pro Val
145 150 155 160
Leu Val Ala Trp Ala Phe Ser Leu Leu Ser Leu Pro Gln Leu Phe
165 170 175

Ile Phe Ala Gln Arg Asn Val Glu Gly Gly Ser Gly Val Thr Asp Cys
 180 185 190
 Trp Ala Cys Phe Ala Glu Pro Trp Gly Arg Arg Thr Tyr Val Thr Trp
 195 200 205
 Ile Ala Leu Met Val Phe Val Ala Pro Thr Leu Gly Ile Ala Ala Cys
 210 215 220
 Gln Val Leu Ile Phe Arg Glu Ile His Ala Ser Leu Val Pro Gly Pro
 225 230 235 240
 Ser Glu Arg Pro Gly Gly Arg Arg Gly Arg Arg Thr Gly Ser Pro
 245 250 255
 Gly Glu Gly Ala His Val Ser Ala Ala Val Ala Lys Thr Val Arg Met
 260 265 270
 Thr Leu Val Ile Val Val Val Tyr Val Leu Cys Trp Ala Pro Phe Phe
 275 280 285
 Leu Val Gln Leu Trp Ala Ala Trp Asp Pro Glu Ala Pro Leu Glu Gly
 290 295 300
 Ala Pro Phe Val Leu Leu Met Leu Leu Ala Ser Leu Asn Ser Cys Thr
 305 310 315 320
 Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Val Ser Ser Glu Leu
 325 330 335
 Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
 340 345 350
 Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp
 355 360 365
 Thr Ser Ser
 370

<210> 2
 <211> 413
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of wild-type beta2AR

<400> 2
 Met Gly Gln Pro Gly Asn Gly Ser Ala Phe Leu Leu Ala Pro Asn Arg
 1 5 10 15
 Ser His Ala Pro Asp His Asp Val Thr Gln Gln Arg Asp Glu Val Trp
 20 25 30
 Val Val Gly Met Gly Ile Val Met Ser Leu Ile Val Leu Ala Ile Val
 35 40 45
 Phe Gly Asn Val Leu Val Ile Thr Ala Ile Ala Lys Phe Glu Arg Leu
 50 55 60
 Gln Thr Val Thr Asn Tyr Phe Ile Thr Ser Leu Ala Cys Ala Asp Leu
 65 70 75 80
 Val Met Gly Leu Ala Val Val Pro Phe Gly Ala Ala His Ile Leu Met
 85 90 95
 Lys Met Trp Thr Phe Gly Asn Phe Trp Cys Glu Phe Trp Thr Ser Ile
 100 105 110
 Asp Val Leu Cys Val Thr Ala Ser Ile Glu Thr Leu Cys Val Ile Ala
 115 120 125
 Val Asp Arg Tyr Phe Ala Ile Thr Ser Pro Phe Lys Tyr Gln Ser Leu
 130 135 140
 Leu Thr Lys Asn Lys Ala Arg Val Ile Ile Leu Met Val Trp Ile Val
 145 150 155 160

Ser Gly Leu Thr Ser Phe Leu Pro Ile Gln Met His Trp Tyr Arg Ala
 165 170 175
 Thr His Gln Glu Ala Ile Asn Cys Tyr Ala Asn Glu Thr Cys Cys Asp
 180 185 190
 Phe Phe Thr Asn Gln Ala Tyr Ala Ile Ala Ser Ser Ile Val Ser Phe
 195 200 205
 Tyr Val Pro Leu Val Ile Met Val Phe Val Tyr Ser Arg Val Phe Gln
 210 215 220
 Glu Ala Lys Arg Gln Leu Gln Lys Ile Asp Lys Ser Glu Gly Arg Phe
 225 230 235 240
 His Val Gln Asn Leu Ser Gln Val Glu Gln Asp Gly Arg Thr Gly His
 245 250 255
 Gly Leu Arg Arg Ser Ser Lys Phe Cys Leu Lys Glu His Lys Ala Leu
 260 265 270
 Lys Thr Leu Gly Ile Ile Met Gly Thr Phe Thr Leu Cys Trp Leu Pro
 275 280 285
 Phe Phe Ile Val Asn Ile Val His Val Ile Gln Asp Asn Leu Ile Arg
 290 295 300
 Lys Glu Val Tyr Ile Leu Leu Asn Trp Ile Gly Tyr Val Asn Ser Gly
 305 310 315 320
 Phe Asn Pro Leu Ile Tyr Cys Arg Ser Pro Asp Phe Arg Ile Ala Phe
 325 330 335
 Gln Glu Leu Leu Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn
 340 345 350
 Gly Tyr Ser Ser Asn Gly Asn Thr Gly Glu Gln Ser Gly Tyr His Val
 355 360 365
 Glu Gln Glu Lys Glu Asn Lys Leu Leu Cys Glu Asp Leu Pro Gly Thr
 370 375 380
 Glu Asp Phe Val Gly His Gln Gly Thr Val Pro Ser Asp Asn Ile Asp
 385 390 395 400
 Ser Gln Gly Arg Asn Cys Ser Thr Asn Asp Ser Leu Leu
 405 410

<210> 3
 <211> 370
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of beta2-AR-V2R chimera

<400> 3
 Met Gly Gln Pro Gly Asn Gly Ser Ala Phe Leu Leu Ala Pro Asn Arg
 1 5 10 15
 Ser His Ala Pro Asp His Asp Val Thr Gln Gln Arg Asp Glu Val Trp
 20 25 30
 Val Val Gly Met Gly Ile Val Met Ser Leu Ile Val Leu Ala Ile Val
 35 40 45
 Phe Gly Asn Val Leu Val Ile Thr Ala Ile Ala Lys Phe Glu Arg Leu
 50 55 60
 Gln Thr Val Thr Asn Tyr Phe Ile Thr Ser Leu Ala Cys Ala Asp Leu
 65 70 75 80
 Val Met Gly Leu Ala Val Val Pro Phe Gly Ala Ala His Ile Leu Met
 85 90 95
 Lys Met Trp Thr Phe Gly Asn Phe Trp Cys Glu Phe Trp Thr Ser Ile
 100 105 110

Asp Val Leu Cys Val Thr Ala Ser Ile Glu Thr Leu Cys Val Ile Ala
 115 120 125
 Val Asp Arg Tyr Phe Ala Ile Thr Ser Pro Phe Lys Tyr Gln Ser Leu
 130 135 140
 Leu Thr Lys Asn Lys Ala Arg Val Ile Ile Leu Met Val Trp Ile Val
 145 150 155 160
 Ser Gly Leu Thr Ser Phe Leu Pro Ile Gln Met His Trp Tyr Arg Ala
 165 170 175
 Thr His Gln Glu Ala Ile Asn Cys Tyr Ala Asn Glu Thr Cys Cys Asp
 180 185 190
 Phe Phe Thr Asn Gln Ala Tyr Ala Ile Ala Ser Ser Ile Val Ser Phe
 195 200 205
 Tyr Val Pro Leu Val Ile Met Val Phe Val Tyr Ser Arg Val Phe Gln
 210 215 220
 Glu Ala Lys Arg Gln Leu Gln Lys Ile Asp Lys Ser Glu Gly Arg Phe
 225 230 235 240
 His Val Gln Asn Leu Ser Gln Val Glu Gln Asp Gly Arg Thr Gly His
 245 250 255
 Gly Leu Arg Arg Ser Ser Lys Phe Cys Leu Lys Glu His Lys Ala Leu
 260 265 270
 Lys Thr Leu Gly Ile Ile Met Gly Thr Phe Thr Leu Cys Trp Leu Pro
 275 280 285
 Phe Phe Ile Val Asn Ile Val His Val Ile Gln Asp Asn Leu Ile Arg
 290 295 300
 Lys Glu Val Tyr Ile Leu Leu Asn Trp Ile Gly Tyr Val Asn Ser Gly
 305 310 315 320
 Phe Asn Pro Leu Ile Tyr Cys Arg Ser Pro Asp Phe Arg Ile Ala Phe
 325 330 335
 Gln Glu Leu Leu Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro
 340 345 350
 Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr
 355 360 365
 Ser Ser
 370

<210> 4
 <211> 382
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of MOR-V2R chimera expressed
 from the pEArrB-1/MOR vector

<400> 4
 Met Asp Ser Ser Thr Gly Pro Gly Asn Thr Ser Asp Cys Ser Asp Pro
 1 5 10 15
 Leu Ala Gln Ala Ser Cys Ser Pro Ala Pro Gly Ser Trp Leu Asn Leu
 20 25 30
 Ser His Val Asp Gly Asn Gln Ser Asp Pro Cys Gly Leu Asn Arg Thr
 35 40 45
 Gly Leu Gly Gly Asn Asp Ser Leu Cys Pro Gln Thr Gly Ser Pro Ser
 50 55 60
 Met Val Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val Cys Val
 65 70 75 80
 Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val Arg Tyr

85	90	95
Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu Ala Leu		
100	105	110
Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val Asn Tyr		
115	120	125
Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile Val Ile		
130	135	140
Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu Cys Thr		
145	150	155
Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys Ala Leu		
165	170	175
Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Val Asn Val Cys Asn Trp		
180	185	190
Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala Thr Thr		
195	200	205
Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser His Pro		
210	215	220
Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile Phe Ala		
225	230	235
Phe Ile Met Pro Ile Leu Ile Ile Thr Val Cys Tyr Gly Leu Met Ile		
245	250	255
Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu Lys Asp		
260	265	270
Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val Ala Val		
275	280	285
Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile Lys Ala		
290	295	300
Leu Ile Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp His Phe		
305	310	315
Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val Leu Tyr		
325	330	335
Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe Cys Ala		
340	345	350
Ala Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser		
355	360	365
Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser		
370	375	380

<210> 5
 <211> 382
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of D1AR-V2R chimera expressed
 from the pEArrB-1/D1AR vector

<400> 5
 Met Ala Pro Asn Thr Ser Thr Met Asp Glu Ala Gly Leu Pro Ala Glu
 1 5 10 15
 Arg Asp Phe Ser Phe Arg Ile Leu Thr Ala Cys Phe Leu Ser Leu Leu
 20 25 30
 Ile Leu Ser Thr Leu Leu Gly Asn Thr Leu Val Cys Ala Ala Val Ile
 35 40 45
 Arg Phe Arg His Leu Arg Ser Lys Val Thr Asn Phe Phe Val Ile Ser
 50 55 60

Leu Ala Val Ser Asp Leu Leu Val Ala Val Leu Val Met Pro Trp Lys
 65 70 75 80
 Ala Val Ala Glu Ile Ala Gly Phe Trp Pro Phe Gly Ser Phe Cys Asn
 85 90 95
 Ile Trp Val Ala Phe Asp Ile Met Cys Ser Thr Ala Ser Ile Leu Asn
 100 105 110
 Leu Cys Val Ile Ser Val Asp Arg Tyr Trp Ala Ile Ser Ser Pro Phe
 115 120 125
 Gln Tyr Glu Arg Lys Met Thr Pro Lys Ala Ala Phe Ile Leu Ile Ser
 130 135 140
 Val Ala Trp Thr Leu Ser Val Leu Ile Ser Phe Ile Pro Val Gln Leu
 145 150 155 160
 Ser Trp His Lys Ala Lys Pro Thr Trp Pro Leu Asp Gly Asn Phe Thr
 165 170 175
 Ser Leu Glu Asp Thr Glu Asp Asp Asn Cys Asp Thr Arg Leu Ser Arg
 180 185 190
 Thr Tyr Ala Ile Ser Ser Ser Leu Ile Ser Phe Tyr Ile Pro Val Ala
 195 200 205
 Ile Met Ile Val Thr Tyr Thr Ser Ile Tyr Arg Ile Ala Gln Lys Gln
 210 215 220
 Ile Arg Arg Ile Ser Ala Leu Glu Arg Ala Ala Val His Ala Lys Asn
 225 230 235 240
 Cys Gln Thr Thr Ala Gly Asn Gly Asn Pro Val Glu Cys Ala Gln Ser
 245 250 255
 Glu Ser Ser Phe Lys Met Ser Phe Lys Arg Glu Thr Lys Val Leu Lys
 260 265 270
 Thr Leu Ser Val Ile Met Gly Val Phe Val Cys Cys Trp Leu Pro Phe
 275 280 285
 Phe Ile Ser Asn Cys Met Val Pro Phe Cys Gly Ser Glu Glu Thr Gln
 290 295 300
 Pro Phe Cys Ile Asp Ser Ile Thr Phe Asp Val Phe Val Trp Phe Gly
 305 310 315 320
 Trp Ala Asn Ser Ser Leu Asn Pro Ile Ile Tyr Ala Phe Asn Ala Asp
 325 330 335
 Phe Gln Lys Ala Phe Ser Thr Leu Leu Gly Cys Tyr Arg Leu Cys Ala
 340 345 350
 Ala Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
 355 360 365
 Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
 370 375 380

<210> 6
 <211> 451
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of 5HT1AR-V2R chimera
 expressed from the pEArrB-1/5HT1AR vector

<400> 6
 Met Asp Val Leu Ser Pro Gly Gln Gly Asn Asn Thr Thr Ser Pro Pro
 1 5 10 15
 Ala Pro Phe Glu Thr Gly Gly Asn Thr Thr Gly Ile Ser Asp Val Thr
 20 25 30
 Val Ser Tyr Gln Val Ile Thr Ser Leu Leu Gly Thr Leu Ile Phe

35	40	45
Cys Ala Val Leu Gly Asn Ala Cys Val Val Ala Ala Ile Ala Leu Glu		
50	55	60
Arg Ser Leu Gln Asn Val Ala Asn Tyr Leu Ile Gly Ser Leu Ala Val		
65	70	75
Thr Asp Leu Met Val Ser Val Leu Val Leu Pro Met Ala Ala Leu Tyr		80
85	90	95
Gln Val Leu Asn Lys Trp Thr Leu Gly Gln Val Thr Cys Asp Leu Phe		
100	105	110
Ile Ala Leu Asp Val Leu Cys Cys Thr Ser Ser Ile Leu His Leu Cys		
115	120	125
Ala Ile Ala Leu Asp Arg Tyr Trp Ala Ile Thr Asp Pro Ile Asp Tyr		
130	135	140
Val Asn Lys Arg Thr Pro Arg Arg Ala Ala Ala Leu Ile Ser Leu Thr		
145	150	155
Trp Leu Ile Gly Phe Leu Ile Ser Ile Pro Pro Met Leu Gly Trp Arg		160
165	170	175
Thr Pro Glu Asp Arg Ser Asp Pro Asp Ala Cys Thr Ile Ser Lys Asp		
180	185	190
His Gly Tyr Thr Ile Tyr Ser Thr Phe Gly Ala Phe Tyr Ile Pro Leu		
195	200	205
Leu Leu Met Leu Val Leu Tyr Gly Arg Ile Phe Arg Ala Ala Arg Phe		
210	215	220
Arg Ile Arg Lys Thr Val Lys Lys Val Glu Lys Thr Gly Ala Asp Thr		
225	230	235
Arg His Gly Ala Ser Pro Ala Pro Gln Pro Lys Lys Ser Val Asn Gly		240
245	250	255
Glu Ser Gly Ser Arg Asn Trp Arg Leu Gly Val Glu Ser Lys Ala Gly		
260	265	270
Gly Ala Leu Cys Ala Asn Gly Ala Val Arg Gln Gly Asp Asp Gly Ala		
275	280	285
Ala Leu Glu Val Ile Glu Val His Arg Val Gly Asn Ser Lys Glu His		
290	295	300
Leu Pro Leu Pro Ser Glu Ala Gly Pro Thr Pro Cys Ala Pro Ala Ser		
305	310	315
Phe Glu Arg Lys Asn Glu Arg Asn Ala Glu Ala Lys Arg Lys Met Ala		
325	330	335
Leu Ala Arg Glu Phe Lys Thr Val Lys Thr Leu Gly Ile Ile Met Gly		
340	345	350
Thr Phe Ile Leu Cys Trp Leu Pro Phe Phe Ile Val Ala Leu Val Leu		
355	360	365
Pro Phe Cys Glu Ser Ser Cys His Met Pro Thr Leu Leu Gly Ala Ile		
370	375	380
Ile Asn Trp Leu Gly Tyr Ser Asn Ser Leu Leu Asn Pro Val Ile Tyr		
385	390	395
400		
Ala Tyr Phe Asn Lys Asp Phe Gln Asn Ala Phe Lys Lys Ile Ile Lys		
405	410	415
Cys Asn Phe Cys Ala Ala Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly		
420	425	430
Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp		
435	440	445
Thr Ser Ser		
450		

<210> 7
<211> 394

<212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of beta3AR-V2R chimera
 expressed from pEArrB-1/beta3AR vector

<400> 7
 Met Ala Pro Trp Pro His Glu Asn Ser Ser Leu Ala Pro Trp Pro Asp
 1 5 10 15
 Leu Pro Thr Leu Ala Pro Asn Thr Ala Asn Thr Ser Gly Leu Pro Gly
 20 25 30
 Val Pro Trp Glu Ala Ala Leu Ala Gly Ala Leu Leu Ala Leu Ala Val
 35 40 45
 Leu Ala Thr Val Gly Gly Asn Leu Leu Val Ile Val Ala Ile Ala Trp
 50 55 60
 Thr Pro Arg Leu Gln Thr Met Thr Asn Val Phe Val Thr Ser Leu Ala
 65 70 75 80
 Ala Ala Asp Leu Val Met Gly Leu Leu Val Val Pro Pro Ala Ala Thr
 85 90 95
 Leu Ala Leu Thr Gly His Trp Pro Leu Gly Ala Thr Gly Cys Glu Leu
 100 105 110
 Trp Thr Ser Val Asp Val Leu Cys Val Thr Ala Ser Ile Glu Thr Leu
 115 120 125
 Cys Ala Leu Ala Val Asp Arg Tyr Leu Ala Val Thr Asn Pro Leu Arg
 130 135 140
 Tyr Gly Ala Leu Val Thr Lys Arg Cys Ala Arg Thr Ala Val Val Leu
 145 150 155 160
 Val Trp Val Val Ser Ala Ala Val Ser Phe Ala Pro Ile Met Ser Gln
 165 170 175
 Trp Trp Arg Val Gly Ala Asp Ala Glu Ala Gln Arg Cys His Ser Asn
 180 185 190
 Pro Arg Cys Cys Ala Phe Ala Ser Asn Met Pro Tyr Val Leu Leu Ser
 195 200 205
 Ser Ser Val Ser Phe Tyr Leu Pro Leu Leu Val Met Leu Phe Val Tyr
 210 215 220
 Ala Arg Val Phe Val Val Ala Thr Arg Gln Leu Arg Leu Leu Arg Gly
 225 230 235 240
 Glu Leu Gly Arg Phe Pro Pro Glu Glu Ser Pro Pro Ala Pro Ser Arg
 245 250 255
 Ser Leu Ala Pro Ala Pro Val Gly Thr Cys Ala Pro Pro Glu Gly Val
 260 265 270
 Pro Ala Cys Gly Arg Arg Pro Ala Arg Leu Leu Pro Leu Arg Glu His
 275 280 285
 Arg Ala Leu Cys Thr Leu Gly Leu Ile Met Gly Thr Phe Thr Leu Cys
 290 295 300
 Trp Leu Pro Phe Phe Leu Ala Asn Val Leu Arg Ala Leu Gly Gly Pro
 305 310 315 320
 Ser Leu Val Pro Gly Pro Ala Phe Leu Ala Leu Asn Trp Leu Gly Tyr
 325 330 335
 Ala Asn Ser Ala Phe Asn Pro Leu Ile Tyr Cys Arg Ser Pro Asp Phe
 340 345 350
 Arg Ser Ala Phe Arg Arg Leu Leu Cys Arg Cys Ala Ala Arg Gly
 355 360 365
 Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser Cys Thr Thr Ala
 370 375 380
 Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser

385 390

<210> 8
 <211> 362
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of Edg1R-V2R chimera expressed
 from pEArrB-1/Edg1R vector

<400> 8
 Met Gly Pro Thr Ser Val Pro Leu Val Lys Ala His Arg Ser Ser Val
 1 5 10 15
 Ser Asp Tyr Val Asn Tyr Asp Ile Ile Val Arg His Tyr Asn Tyr Thr
 20 25 30
 Gly Lys Leu Asn Ile Ser Ala Asp Lys Glu Asn Ser Ile Lys Leu Thr
 35 40 45
 Ser Val Val Phe Ile Leu Ile Cys Cys Phe Ile Ile Leu Glu Asn Ile
 50 55 60
 Phe Val Leu Leu Thr Ile Trp Lys Thr Lys Lys Phe His Arg Pro Met
 65 70 75 80
 Tyr Tyr Phe Ile Gly Asn Leu Ala Leu Ser Asp Leu Leu Ala Gly Val
 85 90 95
 Ala Tyr Thr Ala Asn Leu Leu Ser Gly Ala Thr Thr Tyr Lys Leu
 100 105 110
 Thr Pro Ala Gln Trp Phe Leu Arg Glu Gly Ser Met Phe Val Ala Leu
 115 120 125
 Ser Ala Ser Val Phe Ser Leu Leu Ala Ile Ala Ile Glu Arg Tyr Ile
 130 135 140
 Thr Met Leu Lys Met Lys Leu His Asn Gly Ser Asn Asn Phe Arg Leu
 145 150 155 160
 Phe Leu Leu Ile Ser Ala Cys Trp Val Ile Ser Leu Ile Leu Gly Gly
 165 170 175
 Leu Pro Ile Met Gly Trp Asn Cys Ile Ser Ala Leu Ser Ser Cys Ser
 180 185 190
 Thr Val Leu Pro Leu Tyr His Lys His Tyr Ile Leu Phe Cys Thr Thr
 195 200 205
 Val Phe Thr Leu Leu Leu Leu Ser Ile Val Ile Leu Tyr Cys Arg Ile
 210 215 220
 Tyr Ser Leu Val Arg Thr Arg Ser Arg Arg Leu Thr Phe Arg Lys Asn
 225 230 235 240
 Ile Ser Lys Ala Ser Arg Ser Ser Glu Lys Ser Leu Ala Leu Leu Lys
 245 250 255
 Thr Val Ile Ile Val Leu Ser Val Phe Ile Ala Cys Trp Ala Pro Leu
 260 265 270
 Phe Ile Leu Leu Leu Asp Val Gly Cys Lys Val Lys Thr Cys Asp
 275 280 285
 Ile Leu Phe Arg Ala Glu Tyr Phe Leu Val Leu Ala Val Leu Asn Ser
 290 295 300
 Gly Thr Asn Pro Ile Ile Tyr Thr Leu Thr Asn Lys Glu Met Arg Arg
 305 310 315 320
 Ala Phe Ile Arg Ile Met Ser Cys Cys Lys Cys Ala Ala Ala Arg Gly
 325 330 335
 Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser Cys Thr Thr Ala
 340 345 350

Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
 355 360

<210> 9
 <211> 1113
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence of beta2AR-V2R chimera

<400> 9
 atggggcaac ccgggaacgg cagcgccctc ttgctggcac ccaatagaag ccatgcgcgg 60
 gaccacgacg tcacgcagca aaggacgag gtgtgggtgg tgggcattggg catcgcatg 120
 tctctcatcg tcctggccat cgtgtttggc aatgtgctgg tcacacagc cattgccaag 180
 ttgcagcgctc tgcagacggt caccacactac ttcatcactt cactggcctg tgctgatctg 240
 gtcatgggcc tggcagttggt gcctttggg gcccata ttcttatgaa aatgtggact 300
 tttggcaact tctggtgcga gtttggact tccattgtat tgctgtgcgt cacggccagc 360
 attgagaccc tggcgtgat cgcaatggat cgctactttt ccattacttc accttcaag 420
 taccagagcc tgctgaccaa gaataaggcc cgggtgatca ttctgatggt gtggattgtg 480
 tcaggccta ctccttctt gcccatttcag atgcactggt accggggccac ccaccaggaa 540
 gccatcaact gctatgcca tgagacctgc tgcacttct tcacgaacca agcctatgcc 600
 attgccttcc ccatcggtc cttctacgtt cccctggta tcatggtctt cgtctactcc 660
 agggcttcc aggaggccaa aaggcagctc cagaagattt acaaattctga gggccgcctc 720
 catgtccaga accttagcca ggtggagcag gatgggcggg cggggcatgg actccgcaga 780
 tcttccaagt tctgcttggaa ggacacaaa gcctcaaga cgttaggcat catcatggc 840
 actttcaccc tctgctggct gccttcttc atcgtaaca ttgtgcgtt gatccaggat 900
 aacccatcc gtaaggaagt ttacatcctc ctaaatttggaa taggctatgt caattctgg 960
 ttcaatcccc ttatctactg cggagccca gatttcagga ttgccttcca ggagcttctg 1020
 tgcggccggg gacgcacccc acccagctg ggtcccaag atgagtccctg caccaccgccc 1080
 agctcctccc tggccaagga cacttcatcg tga 1113

<210> 10
 <211> 1149
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence of MOR-V2R chimera

<400> 10
 atggacagca gcaccggccc agggaaacacc agcgactgct cagaccctt agctcaggca 60
 agttgctccc cagcacctgg ctccctggc aacttgcctt acgttgcattt caaccagtcc 120
 gatccatcggt gtctgaaccc caccgggtt ggcgggaacg acagcctgtt ccctcagacc 180
 ggcagccctt ccatggtcac acccattacc atcatggccc tctactctat cgtgtgtgt 240
 gtgggcctct tcggaaactt cctggcatg tatgtgattt taagatacac caaaatgaag 300
 actgccacca acatctacat tttcaacctt gctctggcag acgccttagc gaccagtaca 360
 ctggcccttc agagtgtcaa ctacctgtat ggaacatggc ccttcggaaac catcctctgc 420
 aagatcgta tctcaataga ttactacaac atgttccacca gcatattcac cctctgcacc 480
 atgagcgtgg accgctacat tgctgtctgc caccctgtt aagccctggaa ttccgttacc 540
 ccccgaaatg ccaaaatcgta caacgtctgc aactggatcc tctttctgc catcggtctg 600
 cctgtatgt tcatggcaac cacaataac aggcagggtt ccatagattt caccctcacc 660
 ttctccacc caacctggta ctgggagaac ctgctcaaaa tctgtgtctt tatcttcgtt 720
 ttcatcatgc cgatcctcat catcaactgtt tggtacggcc tgcgtatctt acgactcaag 780
 agcgttcgca tgctatcggtt ctccaaagaa aaggacagga atctgcgcag gatcaccgg 840
 atgggtctgg tggcgttgc tgcgtatctt gtcgttgcga cccctatcca catctacgtc 900

atcatcaaag cgctgatcac gattccagaa accacattc agaccgtttc ctggcacttc 960
 tgcattgctt tgggttacac gaacagctgc ctgaatccag ttctttacgc cttccctggat 1020
 gaaaaacttca agcgatgctt cagagagttc tgcgcggccg cacggggacg caccacccc 1080
 agcctgggtc cccaaatgtga gtcctgcacc accgcccagct cctccctggc caaggacact 1140
 tcatacgta 1149

<210> 11
 <211> 1148
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence of D1AR-V2R chimera

<400> 11
 atggctccta acacttctac catggatgag gccgggctgc cagcggagag ggatttctcc 60
 tttcgcatcc tcacggcctg tttcctgtca ctgctcatcc tgtccactct cctgggcaat 120
 acccttgcgt gtgcggccgt catccgggtt cgacacctga ggtccaaggat gaccaacttc 180
 tttgtcatct cttagctgt gtcagatctc ttggggctg tcctggcat gccctggaaa 240
 gctgtggccg agattgtctgg ctttggccc tttgggtctt tttgtaaat ctgggttagcc 300
 tttgacatca tggctctac ggcgtccatt ctgaacctct gcgtgatcag cgtggacagg 360
 tactgggcta tctccagccc tttccagttt gagaggaaga tgacccccc 420
 atcctgatta gcgtacatg gactctgtct gtccttatat ccttcatccc agtacagcta 480
 agctggcaca aggcaaaagcc cacatggccc ttggatggca attttacctc cctggaggac 540
 accaggatg acaactgtga cacaagggtt agcaggacgt atgcatttc atcgccctc 600
 atcagctttt acatccccgt accattatg atcgtcacct acaccaggat ctacaggatt 660
 gcccagaagc aaaccggcgc atctcagcct tggagagggc agcagtccat gccaagaatt 720
 gcccagaccac cgcaaggtaac gggaaaccccg tcgaatgcgc ccagtctgaa agttcctta 780
 agatgtcctt caagagggag acgaaagttc taaagacgt gtctgtgatc atgggggtgt 840
 ttgtgtgctg ctggctccct ttcttcatct cgaactgtat ggtgcccttc tggctctg 900
 aggagaccca gccattctgc atcgattcca tcacccatcgat tggatggatgggt 960
 ggggaattc ttccctgaac cccattattt atgctttaa tgctgacttc cagaaggcgt 1020
 tctcaaccctt cttagatgc tacagactct ggcggccgc acggggacgc accccaccca 1080
 gcctgggtcc ccaagatgag tcctgcacca ccggccagctc ctccctggcc aaggacactt 1140
 catcgta 1148

<210> 12
 <211> 1356
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence of 5HT1AR-V2R chimera

<400> 12
 atggatgtgc tcagccctgg tcagggcaac aacaccacat caccacccggc tccctttgag 60
 accggccgca acactactgg tatctccgac gtgaccgtca gctaccaagt gatcacctct 120
 ctgctgctgg gcacgctcat cttctgcgcgt gtgctggca atgcgtgcgt ggtggctgcc 180
 atcgccctgg agcgctccct gcagaacgtg gccaattatc ttattggctc tttggcggtc 240
 accgacctca tgggtgcgtt gttgggtctg cccatggccg cgctgtatca ggtgctcaac 300
 aagtggacac tggggccaggt aacctgcgcac ctgttcatcg ccctcgacgt gctgtgctgc 360
 acctcatcca tcttgcacct gtgcgcacatc ggcgtggaca ggtactgggc catcacggac 420
 cccatcgact acgtgaacaa gaggacgccc cggccggccg ctgcgtcat ctgcgtcaact 480
 tggcttattt gcttcctcat ctctatcccg cccatgtctgg gctggcgcac cccggaagac 540
 cgctcgacc cccacgcgtt caccattatc aaggatcatg gctacactat ctattccacc 600
 tttggagctt tctacatccc gctgctgctc atgctgggtc tctatgggcg catattccga 660
 gctgcgcgtt ccgcgtccg caagacggtc aaaaaggtgg agaagacccg agcggacacc 720

cgcacatggag catctcccgc cccgcagccc aagaagagtg tgaatggaga gtcggggagc 780
 aggaactgga ggctggcggt ggagagcaag gctgggggtg ctctgtgcgc caatggcg 840
 gtgaggcaag gtgacgatgg cggccgcctg gaggtgatcg aggtgcaccg agtggcaac 900
 tccaaagagc acttgcctct gcccagcgag gctggtccta ccccttgcgc cccgcctct 960
 ttcgagagga aaaatgagcg caacgcccggag gcaagcgca agatggccct ggcccggagag 1020
 aggaagacag tgaagacgct gggcatcatc atgggcaccc tcatcctctg ctggctgccc 1080
 ttcttcatcg tggctttgt tctgccttc tgccggagca gctgccacat gcccaccctg 1140
 ttggcgcca taatcaattt gctggctac tccaactctc tgcttaaccc cgtcattac 1200
 gcatacttca acaaggactt tcaaaacgcg tttttaagaaga tcatattaatgt taacttctgc 1260
 gcccggcac ggggacgcac cccacccagc ctgggtcccc aagatgagtc ctgcaccacc 1320
 gccagctcct ccctggccaa ggacacttca tcgtga 1356

<210> 13
 <211> 1185
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence of beta3-AR-V2R chimera

<400> 13
 atggctccgt ggcctcacga gaacagctct cttgccttgc ggcggaccc cccacccctg 60
 gcccataa ccccaacac cagtggctg ccagggttc cgtggggaggc gcccctagcc 120
 gggccctgc tggcgctggc ggtgctggcc accgtggag gcaacctgt ggtcatcg 180
 gccatcgctt ggactccgag actccagacc atgaccaacg ttttcgtgac ttgcgtggcc 240
 gcagccgacc tggtgatggg actcctggt gttccggccgg cggccaccc ggcgtgact 300
 ggcactggc cgttggcgcc cactggctgc gagctgtgga cctcgggtgg cgtgtgtgt 360
 gtgaccgcca gcatcgaaac cctgtgcgc ctggccgtgg accgctaccc ggctgtgacc 420
 aaccgcgtgc gttacggcgc actggtcacc aagcgctgcg cccggacagc tgggtcctg 480
 gtgtggctg tgcggccgc ggtgtcggtt gcccacatca tggccagtg gtggcgctg 540
 gggccgacg cccaggcgca ggcgtgccc tccaacccgc gtcgtgtgc ttgcctcc 600
 aacatgcctt acgtgtgt gtcctccctt gtccttctt accttcctt ttcgtgtatg 660
 ctcttcgtct acgcgcgggt tttcggtg gtcacgcgc agtcgcgtt gtcgcgcggg 720
 gagctggcc gcttcgcgc cggaggatct cggccggcgc gtcgcgcgtc tctggcccc 780
 gcccgggtgg ggacgtgcgc tccggccgaa ggggtgccccg ctcggccggc gggccggc 840
 cgcctctgc ctctccggga acaccggcc ctgtgcaccc tgggtctcat catgggcacc 900
 ttcaactctt gctggttgcc ctttttctg gccaacgtgc tgcgcgcctt gggggcccc 960
 tctctagtcc cggggccggc tttccttgcc ctgaactggc taggttatgc caattctgcc 1020
 ttcaacccgc tcatactactg cccgagcccg gactttcgca ggccttcgg ccgtcttctg 1080
 tgccgctgcg cggccgcacg gggacgcacc ccacccagcc tgggtccccca agatgagtc 1140
 tgcaccacccg ccagctcctc cctggccaaag gacacttcat cgtga 1185

<210> 14
 <211> 1089
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence of Edg1-V2R chimera

<400> 14
 atggggccca ccagcgtccc gctggtaag gcccacccgc gtcggcttc tgactacgtc 60
 aactatgata tcatacgccg gcattacaac tacacggaa agctgaatat cagcgcggac 120
 aaggagaaca gcattaaact gacctcggtg gtgttcattc tcatctgtct ctttatcatc 180
 ctggagaaca tctttgtctt gctgaccatt tggaaaacca agaaattcca ccgacccatg 240
 tactattttt ttggcaatct gcccctctca gacctgttgg caggagtagc ctacacagct 300
 aacctgctct tgcgtggcc caccacccac aagctcactc cccggccagtg gtttctgcgg 360

gaagggagta tgtttgtggc cctgtcagcc tccgtgttca gtctcctcgc catgccatt 420
 gagcgctata tcacaatgct gaaaatgaaa ctccacaacg ggagcaataa cttccgcctc 480
 ttcctgctaa tcagcgccctg ctgggtcatc tccctcatcc tgggtggcct gcctatcatg 540
 ggctggaact gcatcagtgc gctgtccagc tgctccaccg tgctgccgct ctaccacaag 600
 cactatatcc tcttctgcac cacggcttc actctgcttc tgctctccat cgtcattctg 660
 tactgcagaa tctactcctt ggtcaggact cggagccgccc gcctgacggtt cgcgaagaac 720
 atttccaagg ccagccgcag ctctgagaag tcgctggcgc tgctcaagac cgtaattatc 780
 gtcctgagcg tcttcatcgc ctgctggca ccgcttca tcctgctccct gctggatgtg 840
 ggctgcaagg tgaagacctg tgacatcctc ttcagagcgg agtacttcct ggtgttagct 900
 gtgctcaact ccggcaccaa ccccatcatt tacactctga ccaacaagga gatgcgtcgg 960
 gccttcatcc ggatcatgtc ctgctgcaag tgcgccgccc cacgggacg caccacccc 1020
 agcctgggtc cccaagatga gtcctgcacc accgcccagct cctccctggc caaggacact 1080
 tcatcgtga 1089

<210> 15
 <211> 43
 <212> PRT
 <213> Homo sapiens

<400> 15
 Asn Pro Ile Val Tyr Ala Phe Arg Ile Gln Lys Phe Arg Val Thr Phe
 1 5 10 15
 Leu Lys Ile Trp Asn Asp His Phe Arg Cys Gln Pro Ala Pro Pro Ile
 20 25 30
 Asp Glu Asp Leu Pro Glu Glu Arg Pro Asp Asp
 35 40

<210> 16
 <211> 176
 <212> PRT
 <213> Homo sapiens

<400> 16
 Asn Pro Ile Ile Tyr Pro Cys Ser Ser Lys Glu Phe Arg Ala Phe Val
 1 5 10 15
 Arg Ile Leu Gly Cys Gln Cys Arg Gly Arg Gly Arg Arg Arg Arg
 20 25 30
 Arg Arg Arg Arg Leu Gly Gly Cys Ala Tyr Thr Tyr Arg Pro Trp Thr
 35 40 45
 Arg Gly Gly Ser Leu Glu Arg Ser Gln Ser Arg Lys Asp Ser Leu Asp
 50 55 60
 Asp Ser Gly Ser Cys Leu Ser Gly Ser Gln Arg Thr Leu Pro Ser Ala
 65 70 75 80
 Ser Pro Ser Pro Gly Tyr Leu Gly Arg Gly Ala Pro Pro Pro Val Glu
 85 90 95
 Leu Cys Ala Phe Pro Glu Trp Lys Ala Pro Gly Ala Leu Leu Ser Leu
 100 105 110
 Pro Ala Pro Glu Pro Pro Gly Arg Arg Gly Arg His Asp Ser Gly Pro
 115 120 125
 Leu Phe Thr Phe Lys Leu Leu Thr Glu Pro Glu Ser Pro Gly Thr Asp
 130 135 140
 Gly Gly Ala Ser Asn Gly Gly Cys Glu Ala Ala Ala Asp Val Ala Asn
 145 150 155 160
 Gly Gln Pro Gly Phe Lys Ser Asn Met Pro Leu Ala Pro Gly Gln Phe
 165 170 175

<210> 17
 <211> 29
 <212> PRT
 <213> Homo sapiens

<400> 17
 Asn Pro Val Ile Tyr Thr Ile Phe Asn His Asp Phe Arg Arg Ala Phe
 1 5 10 15
 Lys Lys Ile Leu Cys Arg Gly Asp Arg Lys Arg Ile Val
 20 25

<210> 18
 <211> 29
 <212> PRT
 <213> Human

<400> 18
 Asn Pro Val Ile Tyr Thr Ile Phe Asn Gln Asp Phe Arg Arg Ala Phe
 1 5 10 15
 Arg Arg Ile Leu Cys Arg Pro Trp Thr Gln Thr Ala Trp
 20 25

<210> 19
 <211> 31
 <212> PRT
 <213> Human

<400> 19
 Asn Pro Val Ile Tyr Thr Val Phe Asn Gln Asp Phe Arg Pro Ser Phe
 1 5 10 15
 Lys His Ile Leu Phe Arg Arg Arg Arg Arg Gly Phe Arg Gln
 20 25 30

<210> 20
 <211> 105
 <212> PRT
 <213> Homo sapiens

<400> 20
 Asn Pro Ile Ile Tyr Cys Arg Ser Pro Asp Phe Arg Lys Ala Phe Gln
 1 5 10 15
 Gly Leu Leu Cys Cys Ala Arg Arg Ala Ala Arg Arg Arg His Ala Thr
 20 25 30
 His Gly Asp Arg Pro Arg Ala Ser Gly Cys Leu Ala Arg Pro Gly Pro
 35 40 45
 Pro Pro Ser Pro Gly Ala Ala Ser Asp Asp Asp Asp Asp Val Val
 50 55 60
 Gly Ala Thr Pro Pro Ala Arg Leu Leu Glu Pro Trp Ala Gly Cys Asn
 65 70 75 80
 Gly Gly Ala Ala Ala Asp Ser Asp Ser Ser Leu Asp Glu Pro Cys Arg
 85 90 95
 Pro Gly Phe Ala Ser Glu Ser Lys Val
 100 105

<210> 21
 <211> 92
 <212> PRT
 <213> Homo sapiens

<400> 21
 Asn Pro Leu Ile Tyr Cys Arg Ser Pro Asp Phe Arg Ile Ala Phe Gln
 1 5 10 15
 Glu Leu Leu Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn Gly
 20 25 30
 Tyr Ser Ser Asn Gly Asn Thr Gly Glu Gln Ser Gly Tyr His Val Glu
 35 40 45
 Gln Glu Lys Glu Asn Lys Leu Leu Cys Glu Asp Leu Pro Gly Thr Glu
 50 55 60
 Asp Phe Val Gly His Gln Gly Thr Val Pro Ser Asp Asn Ile Asp Ser
 65 70 75 80
 Gln Gly Arg Asn Cys Ser Thr Asn Asp Ser Leu Leu
 85 90

<210> 22
 <211> 120
 <212> PRT
 <213> Homo sapiens

<400> 22
 Asn Pro Ile Ile Tyr Ala Phe Asn Ala Asp Phe Arg Lys Ala Phe Ser
 1 5 10 15
 Thr Leu Leu Gly Cys Tyr Arg Leu Cys Pro Ala Thr Asn Asn Ala Ile
 20 25 30
 Glu Thr Val Ser Ile Asn Asn Asn Gly Ala Ala Met Phe Ser Ser His
 35 40 45
 His Glu Pro Arg Gly Ser Ile Ser Lys Glu Cys Asn Leu Val Tyr Leu
 50 55 60
 Ile Pro His Ala Val Gly Ser Ser Glu Asp Leu Lys Lys Glu Glu Ala
 65 70 75 80
 Ala Gly Ile Ala Arg Pro Leu Glu Lys Leu Ser Pro Ala Leu Ser Val
 85 90 95
 Ile Leu Asp Tyr Asp Thr Asp Val Ser Leu Glu Lys Ile Gln Pro Ile
 100 105 110
 Thr Gln Asn Gly Gln His Pro Thr
 115 120

<210> 23
 <211> 22
 <212> PRT
 <213> Human

<400> 23
 Asn Pro Ile Ile Tyr Thr Thr Phe Asn Ile Glu Phe Arg Lys Ala Phe
 1 5 10 15
 Leu Lys Ile Leu His Cys
 20

<210> 24
 <211> 22
 <212> PRT
 <213> Human

<400> 24
 Asn Pro Val Ile Tyr Thr Thr Phe Asn Ile Glu Phe Arg Lys Ala Phe
 1 5 10 15
 Leu Lys Ile Leu Ser Cys
 20

<210> 25
 <211> 24
 <212> PRT
 <213> Human

<400> 25
 Asn Pro Val Ile Tyr Thr Val Phe Asn Ala Glu Phe Arg Asn Val Phe
 1 5 10 15
 Arg Lys Ala Leu Arg Ala Cys Cys
 20

<210> 26
 <211> 123
 <212> PRT
 <213> Human

<400> 26
 Asn Pro Val Ile Tyr Ala Phe Asn Ala Asp Phe Gln Lys Val Phe Ala
 1 5 10 15
 Gln Leu Leu Gly Cys Ser His Phe Cys Ser Arg Thr Pro Val Glu Thr
 20 25 30
 Val Asn Ile Ser Asn Glu Leu Ile Ser Tyr Asn Gln Asp Ile Val Phe
 35 40 45
 His Lys Glu Ile Ala Ala Ala Tyr Ile His Met Met Pro Asn Ala Val
 50 55 60
 Thr Pro Gly Asn Arg Glu Val Asp Asn Asp Glu Glu Glu Gly Pro Phe
 65 70 75 80
 Asp Arg Met Phe Gln Ile Tyr Gln Thr Ser Pro Asp Gly Asp Pro Val
 85 90 95
 Ala Glu Ser Val Trp Glu Leu Asp Cys Glu Gly Glu Ile Ser Leu Asp
 100 105 110
 Lys Ile Thr Pro Phe Thr Pro Asn Gly Phe His
 115 120

<210> 27
 <211> 47
 <212> PRT
 <213> Homo sapiens

<400> 27
 Asn Pro Met Cys Tyr Ala Leu Cys Asn Lys Ala Phe Arg Asp Thr Phe
 1 5 10 15

Arg Leu Leu Leu Leu Cys Arg Trp Asp Lys Arg Arg Trp Arg Lys Ile
 20 25 30
 Pro Lys Arg Pro Gly Ser Val His Arg Thr Pro Ser Arg Gln Cys
 35 40 45

<210> 28
 <211> 31
 <212> PRT
 <213> Homo sapiens

<400> 28
 Asn Pro Ala Cys Tyr Ala Leu Cys Asn Ala Thr Phe Lys Lys Thr Phe
 1 5 10 15
 Lys His Leu Leu Met Cys His Tyr Lys Asn Ile Gly Ala Thr Arg
 20 25 30

<210> 29
 <211> 51
 <212> PRT
 <213> Homo sapiens

<400> 29
 Asn Pro Val Cys Tyr Ala Leu Cys Asn Lys Thr Phe Arg Thr Thr Phe
 1 5 10 15
 Lys Met Leu Leu Leu Cys Gln Cys Asp Lys Lys Lys Arg Arg Lys Gln
 20 25 30
 Gln Tyr Gln Gln Arg Gln Ser Val Ile Phe His Lys Arg Ala Pro Glu
 35 40 45
 Gln Ala Leu
 50

<210> 30
 <211> 31
 <212> PRT
 <213> Homo sapiens

<400> 30
 Asn Pro Ala Cys Tyr Ala Leu Cys Asn Ala Thr Phe Lys Lys Thr Phe
 1 5 10 15
 Arg His Leu Leu Leu Cys Gln Tyr Arg Asn Ile Gly Thr Ala Arg
 20 25 30

<210> 31
 <211> 42
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> m5 muscarinic receptor

<400> 31
 Asn Pro Ile Cys Tyr Ala Leu Cys Asn Arg Thr Phe Arg Lys Thr Phe
 1 5 10 15

Lys Met Leu Leu Leu Cys Arg Trp Lys Lys Lys Lys Val Glu Glu Lys
 20 25 30
 Leu Tyr Trp Gln Gly Asn Ser Lys Leu Pro
 35 40

<210> 32
 <211> 24
 <212> PRT
 <213> Homo sapiens

<400> 32
 Asn Pro Val Ile Tyr Ala Tyr Phe Asn Lys Asp Phe Gln Asn Ala Phe
 1 5 10 15
 Lys Lys Ile Ile Lys Cys Lys Phe
 20

<210> 33
 <211> 26
 <212> PRT
 <213> Homo sapiens

<400> 33
 Asn Pro Ile Ile Tyr Thr Met Ser Asn Glu Asp Phe Lys Gln Ala Phe
 1 5 10 15
 His Lys Leu Ile Arg Phe Lys Cys Thr Ser
 20 25

<210> 34
 <211> 24
 <212> PRT
 <213> Homo sapiens

<400> 34
 Asn Pro Leu Leu Tyr Thr Ser Phe Asn Glu Asp Phe Lys Leu Ala Phe
 1 5 10 15
 Lys Lys Leu Ile Arg Cys Arg Glu
 20

<210> 35
 <211> 37
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> olfactory receptor 6A1

<400> 35
 Asn Pro Ile Ile Tyr Cys Leu Arg Asn Gln Glu Val Lys Arg Ala Leu
 1 5 10 15
 Cys Cys Ile Leu His Leu Tyr Gln His Gln Asp Pro Asp Pro Lys Lys
 20 25 30
 Gly Ser Arg Asn Val
 35

<210> 36
 <211> 27
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> olfactory receptor 2C1

<400> 36
 Asn Pro Leu Ile Tyr Thr Leu Arg Asn Met Glu Val Lys Gly Ala Leu
 1 5 10 15
 Arg Arg Leu Leu Gly Lys Gly Arg Glu Val Gly
 20 25

<210> 37
 <211> 62
 <212> PRT
 <213> Homo sapiens

<400> 37
 Asn Pro Leu Phe Tyr Gly Phe Leu Gly Lys Lys Phe Lys Arg Tyr Phe
 1 5 10 15
 Leu Gln Leu Leu Lys Tyr Ile Pro Pro Lys Ala Lys Ser His Ser Asn
 20 25 30
 Leu Ser Thr Lys Met Ser Thr Leu Ser Tyr Arg Pro Ser Asp Asn Val
 35 40 45
 Ser Ser Ser Thr Lys Lys Pro Ala Pro Cys Phe Glu Val Glu
 50 55 60

<210> 38
 <211> 50
 <212> PRT
 <213> Homo sapiens

<400> 38
 Asn Pro Phe Leu Tyr Cys Phe Val Gly Asn Arg Phe Gln Gln Lys Leu
 1 5 10 15
 Arg Ser Val Phe Arg Val Pro Ile Thr Trp Leu Gln Gly Lys Arg Glu
 20 25 30
 Ser Met Ser Cys Arg Lys Ser Ser Ser Leu Arg Glu Met Glu Thr Phe
 35 40 45
 Val Ser
 50

<210> 39
 <211> 51
 <212> PRT
 <213> Homo sapiens

<400> 39
 Asn Pro Leu Ile Tyr Ala Phe Ile Gly Gln Lys Phe Arg His Gly Leu
 1 5 10 15

Leu Lys Ile Leu Ala Ile His Gly Leu Ile Ser Lys Asp Ser Leu Pro
 20 25 30
 Lys Asp Ser Arg Pro Ser Phe Val Gly Ser Ser Ser Gly His Thr Ser
 35 40 45
 Thr Thr Leu
 50

<210> 40
 <211> 67
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> cx3c chemokine receptor 1 (cx3crl) (fractalkine receptor)

<400> 40
 Asn Pro Leu Ile Tyr Ala Phe Ala Gly Glu Lys Phe Arg Arg Tyr Leu
 1 5 10 15
 Tyr His Leu Tyr Gly Lys Cys Leu Ala Val Leu Cys Gly Arg Ser Val
 20 25 30
 His Val Asp Phe Ser Ser Ser Glu Ser Gln Arg Ser Arg His Gly Ser
 35 40 45
 Val Leu Ser Ser Asn Phe Thr Tyr His Thr Ser Asp Gly Asp Ala Leu
 50 55 60
 Leu Leu Leu
 65

<210> 41
 <211> 59
 <212> PRT
 <213> Human

<400> 41
 Asn Pro Ile Leu Tyr Asn Leu Val Ser Ala Asn Phe Arg His Ile Phe
 1 5 10 15
 Leu Ala Thr Leu Ala Cys Leu Cys Pro Val Trp Arg Arg Arg Arg Lys
 20 25 30
 Arg Pro Ala Phe Ser Arg Lys Ala Asp Ser Val Ser Ser Asn His Thr
 35 40 45
 Leu Ser Ser Asn Ala Thr Arg Glu Thr Leu Tyr
 50 55

<210> 42
 <211> 107
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> substance-P receptor (SPR) (NK-1 receptor) (NK-1R)

<400> 42
 Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
 1 5 10 15

Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
 20 25 30
 Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr Gln Gly Ser Val
 35 40 45
 Tyr Lys Val Ser Arg Leu Glu Thr Thr Ile Ser Thr Val Val Gly Ala
 50 55 60
 His Glu Glu Glu Pro Glu Asp Gly Pro Lys Ala Thr Pro Ser Ser Leu
 65 70 75 80
 Asp Leu Thr Ser Asn Cys Ser Ser Arg Ser Asp Ser Lys Thr Met Thr
 85 90 95
 Glu Ser Phe Ser Phe Ser Ser Asn Val Leu Ser
 100 105

<210> 43
 <211> 50
 <212> PRT
 <213> Homo sapiens

<400> 43
 Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Val Ser Ser Glu Leu Arg
 1 5 10 15
 Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro
 20 25 30
 Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr
 35 40 45
 Ser Ser
 50

<210> 44
 <211> 83
 <212> PRT
 <213> Human

<400> 44
 Asn Pro Val Ile Tyr Asn Leu Met Ser Gln Lys Phe Arg Ala Ala Phe
 1 5 10 15
 Arg Lys Leu Cys Asn Cys Lys Gln Lys Pro Thr Glu Lys Pro Ala Asn
 20 25 30
 Tyr Ser Val Ala Leu Asn Tyr Ser Val Ile Lys Glu Ser Asp His Phe
 35 40 45
 Ser Thr Glu Leu Asp Asp Ile Thr Val Thr Asp Thr Tyr Leu Ser Ala
 50 55 60
 Thr Lys Val Ser Phe Asp Asp Thr Cys Leu Ala Ser Glu Val Ser Phe
 65 70 75 80
 Ser Gln Ser

<210> 45
 <211> 65
 <212> PRT
 <213> Human

<400> 45
 Asn Pro Trp Ile Tyr Met Leu Phe Thr Gly His Leu Phe His Glu Leu

1	5	10	15
Val Gln Arg Phe Leu Cys Cys Ser Ala Ser Tyr Leu Lys Gly Arg Arg			
20	25	30	
Leu Gly Glu Thr Ser Ala Ser Lys Lys Ser Asn Ser Ser Ser Phe Val			
35	40	45	
Leu Ser His Arg Ser Ser Ser Gln Arg Ser Cys Ser Gln Pro Ser Thr			
50	55	60	

Ala
65

<210> 46
<211> 75
<212> PRT
<213> Homo sapiens

<400> 46			
Asn Pro Val Leu Tyr Ser Leu Met Ser Ser Arg Phe Arg Glu Thr Phe			
1	5	10	15
Gln Glu Ala Leu Cys Leu Gly Ala Cys Cys His Arg Leu Arg Pro Arg			
20	25	30	
His Ser Ser His Ser Leu Ser Arg Met Thr Thr Gly Ser Thr Leu Cys			
35	40	45	
Asp Val Gly Ser Leu Gly Ser Trp Val His Pro Leu Ala Gly Asn Asp			
50	55	60	
Gly Pro Glu Ala Gln Gln Glu Thr Asp Pro Ser			
65	70	75	

<210> 47
<211> 62
<212> PRT
<213> Homo sapiens

<400> 47			
Asn Pro Leu Val Tyr Cys Phe Met His Arg Arg Phe Arg Gln Ala Cys			
1	5	10	15
Leu Glu Thr Cys Ala Arg Cys Cys Pro Arg Pro Pro Arg Ala Arg Pro			
20	25	30	
Arg Ala Leu Pro Asp Glu Asp Pro Pro Thr Pro Ser Ile Ala Ser Leu			
35	40	45	
Ser Arg Leu Ser Tyr Thr Thr Ile Ser Thr Leu Gly Pro Gly			
50	55	60	

<210> 48
<211> 82
<212> PRT
<213> Homo sapiens

<400> 48			
Asn Pro Leu Val Tyr Ala Leu Ala Ser Arg His Phe Arg Ala Arg Phe			
1	5	10	15
Arg Arg Leu Trp Pro Cys Gly Arg Arg Arg Arg His Arg Ala Arg Arg			
20	25	30	
Ala Leu Arg Arg Val Arg Pro Ala Ser Ser Gly Pro Pro Gly Cys Pro			
35	40	45	

Gly Asp Ala Arg Pro Ser Gly Arg Leu Leu Ala Gly Gly Gly Gln Gly
 50 55 60
 Pro Glu Pro Arg Glu Gly Pro Val His Gly Gly Glu Ala Ala Arg Gly
 65 70 75 80
 Pro Glu

<210> 49
 <211> 76
 <212> PRT
 <213> Human

<400> 49
 Asn Pro Ile Ile Tyr Thr Leu Thr Asn Lys Glu Met Arg Arg Ala Phe
 1 5 10 15
 Ile Arg Ile Met Ser Cys Cys Lys Cys Pro Ser Gly Asp Ser Ala Gly
 20 25 30
 Lys Phe Lys Arg Pro Ile Ile Ala Gly Met Glu Phe Ser Arg Ser Lys
 35 40 45
 Ser Asp Asn Ser Ser His Pro Gln Lys Asp Glu Gly Asp Asn Pro Glu
 50 55 60
 Thr Ile Met Ser Ser Gly Asn Val Asn Ser Ser Ser
 65 70 75

<210> 50
 <211> 80
 <212> PRT
 <213> Homo sapiens

<400> 50
 Asn Pro Ile Ile Tyr Ala Leu Arg Ser Lys Asp Leu Arg His Ala Phe
 1 5 10 15
 Arg Ser Met Phe Pro Ser Cys Glu Gly Thr Ala Gln Pro Leu Asp Asn
 20 25 30
 Ser Met Gly Asp Ser Asp Cys Leu His Lys His Ala Asn Asn Ala Ala
 35 40 45
 Ser Val His Arg Ala Ala Glu Ser Cys Ile Lys Ser Thr Val Lys Ile
 50 55 60
 Ala Lys Val Thr Met Ser Val Ser Thr Asp Thr Ser Ala Glu Ala Leu
 65 70 75 80

<210> 51
 <211> 59
 <212> PRT
 <213> Human

<400> 51
 Asn Pro Val Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe
 1 5 10 15
 Arg Gln Leu Cys Arg Lys Pro Cys Gly Arg Pro Asp Pro Ser Ser Phe
 20 25 30
 Ser Arg Pro Arg Glu Ala Thr Ala Arg Glu Arg Val Thr Ala Cys Thr
 35 40 45
 Pro Ser Asp Gly Pro Gly Gly Arg Ala Ala

50

55

<210> 52
 <211> 58
 <212> PRT
 <213> Human

<400> 52
 Asp Pro Phe Val Tyr Tyr Phe Val Ser His Asp Phe Arg Asp His Ala
 1 5 10 15
 Lys Asn Ala Leu Leu Cys Arg Ser Val Arg Thr Val Lys Gln Met Gln
 20 25 30
 Val Ser Leu Thr Ser Lys Lys His Ser Arg Lys Ser Ser Ser Tyr Ser
 35 40 45
 Ser Ser Ser Thr Thr Val Lys Thr Ser Tyr
 50 55

<210> 53
 <211> 66
 <212> PRT
 <213> Rat

<400> 53
 Asn Gly Glu Val Gln Ala Glu Leu Arg Arg Lys Trp Arg Arg Trp His
 1 5 10 15
 Leu Gln Gly Val Leu Gly Trp Ser Ser Lys Ser Gln His Pro Trp Gly
 20 25 30
 Gly Ser Asn Gly Ala Thr Cys Ser Thr Gln Val Ser Met Leu Thr Arg
 35 40 45
 Val Ser Pro Ser Ala Arg Arg Ser Ser Ser Phe Gln Ala Glu Val Ser
 50 55 60
 Leu Val
 65

<210> 54
 <211> 90
 <212> DNA
 <213> Human

<400> 54
 gccccggggac gcaccccccacc cagcctgggt ccccaagatg agtcctgcac caccggccagc 60
 tcctccctgg ccaaggacac ttcatcgtga 90

<210> 55
 <211> 114
 <212> DNA
 <213> Human

<400> 55
 gcggccgcac ggggacgcac cccacccagc ctgggtcccc aagatgagtc ctgcaccacc 60
 gccagctcct ccctggccaa ggacacttca tcgtgaagat ctccgcggtc taga 114

<210> 56
 <211> 31

<212> PRT
<213> Artificial Sequence

<220>
<223> carboxy terminus of modified GPCR

<400> 56
Ala Ala Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu
1 5 10 15
Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
20 25 30

<210> 57
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> carboxyl-terminal tail of V2R

<400> 57
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
1 5 10 15
Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Thr Ser Ser
20 25 30

<210> 58
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> V2R mutant receptor

<400> 58
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
1 5 10 15
Cys Thr Thr Ala
20

<210> 59
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> V2R mutant receptor

<400> 59
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
1 5 10 15
Cys Thr Thr Ala Ala Ala Ala Leu Ala Lys Asp Ala Ala Ala
20 25 30

<210> 60
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> V2R mutant receptor

<400> 60
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
1 5 10 15
Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp Ala Ala Ala
20 25 30

<210> 61
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> V2R mutant receptor

<400> 61
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
1 5 10 15
Cys Thr Thr Ala Ala Ala Leu Ala Lys Asp Thr Ser Ser
20 25 30

<210> 62
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> beta-2AR mutant receptor

<400> 62
Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly Pro Gln Asp Glu Ser
1 5 10 15
Cys Thr Thr Ala Ala Ala Leu Ala Lys Asp Thr Ser Ser
20 25 30

<210> 63
<211> 73
<212> PRT
<213> Artificial Sequence

<220>
<223> carboxyl-terminal tail of beta-2AR

<400> 63
Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn Gly Tyr Ser Ser
1 5 10 15

Asn Gly Asn Thr Gly Glu Gln Ser Gly Tyr His Val Glu Gln Glu Lys
 20 25 30
 Glu Asn Lys Leu Leu Cys Glu Asp Leu Pro Gly Thr Glu Asp Phe Val
 35 40 45
 Gly His Gln Gly Thr Val Pro Ser Asp Asn Ile Asp Ser Gln Gly Arg
 50 55 60
 Asn Cys Ser Thr Asn Asp Ser Leu Leu
 65 70

<210> 64
 <211> 83
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> beta-2AR mutant receptor

<400> 64
 Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn Gly Tyr Ser Ser
 1 5 10 15
 Asn Gly Asn Thr Gly Glu Gln Ser Gly Tyr His Val Glu Gln Glu Lys
 20 25 30
 Glu Asn Lys Leu Leu Cys Glu Asp Leu Pro Gly Thr Glu Asp Phe Val
 35 40 45
 Gly His Gln Gly Thr Val Pro Ser Asp Asn Ile Asp Ser Gln Gly Arg
 50 55 60
 Asn Cys Ser Thr Asn Asp Ser Leu Leu Ser Ser Ser Leu Ala Lys Asp
 65 70 75 80
 Thr Ser Ser

<210> 65
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> beta-2AR mutant receptor

<400> 65
 Cys Leu Arg Arg Ser Ser Leu Lys Ala Tyr Gly Asn Gly Tyr Ser Ser
 1 5 10 15
 Asn Gly Asn Thr Ser Ser Leu Ala Lys Asp Thr Ser Ser
 20 25 30

<210> 66
 <211> 51
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> carboxyl-terminal tail of V2R

<400> 66

Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Ser Val Ser Ser Glu Leu
 1 5 10 15
 Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
 20 25 30
 Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp
 35 40 45
 Thr Ser Ser
 50

<210> 67
 <211> 51
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> receptor mutant

<400> 67
 Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Ser Val Ser Ser Glu Leu
 1 5 10 15
 Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
 20 25 30
 Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ala Ala Ala Lys Asp
 35 40 45
 Thr Ser Ser
 50

<210> 68
 <211> 52
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> receptor mutant

<400> 68
 Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Ser Val Ser Ser Glu Leu
 1 5 10 15
 Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
 20 25 30
 Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp
 35 40 45
 Thr Ala Ala Ala
 50

<210> 69
 <211> 60
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> carboxyl-terminal tail of NTR-1

<400> 69

Asn Pro Ile Leu Tyr Asn Leu Val Ser Ala Asn Phe Arg Gln Val Phe
 1 5 10 15
 Leu Ser Thr Leu Ala Cys Leu Cys Pro Gly Trp Arg His Arg Arg Lys
 20 25 30
 Lys Arg Pro Thr Phe Ser Arg Lys Pro Asn Ser Met Ser Ser Asn His
 35 40 45
 Ala Phe Ser Thr Ser Ala Thr Arg Glu Thr Leu Tyr
 50 55 60

<210> 70
 <211> 60
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> receptor mutant

<400> 70
 Asn Pro Ile Leu Tyr Asn Leu Val Ser Ala Asn Phe Arg Gln Val Phe
 1 5 10 15
 Leu Ser Thr Leu Ala Cys Leu Cys Pro Gly Trp Arg His Arg Arg Lys
 20 25 30
 Lys Arg Pro Thr Phe Ser Arg Lys Pro Asn Ser Ala Ser Ala Ala His
 35 40 45
 Ala Phe Ser Thr Ser Ala Thr Arg Glu Thr Leu Tyr
 50 55 60

<210> 71
 <211> 60
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> receptor mutant

<400> 71
 Asn Pro Ile Leu Tyr Asn Leu Val Ser Ala Asn Phe Arg Gln Val Phe
 1 5 10 15
 Leu Ser Thr Leu Ala Cys Leu Cys Pro Gly Trp Arg His Arg Arg Lys
 20 25 30
 Lys Arg Pro Thr Phe Ser Arg Lys Pro Asn Ser Met Ser Ser Asn His
 35 40 45
 Ala Phe Ser Ala Ala Ala Thr Arg Glu Thr Leu Tyr
 50 55 60

<210> 72
 <211> 65
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> carboxyl-terminal tail of OTR

<400> 72

Asn Pro Trp Ile Tyr Met Leu Phe Thr Gly His Leu Phe His Glu Leu
 1 5 10 15
 Val Gln Arg Phe Leu Cys Cys Ser Ala Ser Tyr Leu Lys Gly Arg Arg
 20 25 30
 Leu Gly Glu Thr Ser Ala Ser Lys Lys Ser Asn Ser Ser Phe Val
 35 40 45
 Leu Ser His Arg Ser Ser Gln Arg Ser Cys Ser Gln Pro Ser Thr
 50 55 60
 Ala
 65

<210> 73
 <211> 65
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> receptor mutant

<400> 73
 Asn Pro Trp Ile Tyr Met Leu Phe Thr Gly His Leu Phe His Glu Leu
 1 5 10 15
 Val Gln Arg Phe Leu Cys Cys Ser Ala Ser Tyr Leu Lys Gly Arg Ala
 20 25 30
 Ala Ala Ala Thr Ser Ala Ser Lys Lys Ser Asn Ser Ser Phe Val
 35 40 45
 Leu Ser His Arg Ser Ser Gln Arg Ser Cys Ser Gln Pro Ser Thr
 50 55 60
 Ala
 65

<210> 74
 <211> 65
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> receptor mutant

<400> 74
 Asn Pro Trp Ile Tyr Met Leu Phe Thr Gly His Leu Phe His Glu Leu
 1 5 10 15
 Val Gln Arg Phe Leu Cys Cys Ser Ala Ser Tyr Leu Lys Gly Arg Arg
 20 25 30
 Leu Gly Glu Thr Ser Ala Ala Ala Ser Asn Ser Ser Phe Val
 35 40 45
 Leu Ser His Arg Ser Ser Gln Arg Ser Cys Ser Gln Pro Ser Thr
 50 55 60
 Ala
 65

<210> 75
 <211> 65
 <212> PRT

<213> Artificial Sequence

<220>

<223> receptor mutant

<400> 75

Asn	Pro	Trp	Ile	Tyr	Met	Leu	Phe	Thr	Gly	His	Leu	Phe	His	Glu	Leu
1					5				10				15		
Val	Gln	Arg	Phe	Leu	Cys	Cys	Ser	Ala	Ser	Tyr	Leu	Lys	Gly	Arg	Arg
					20				25			30			
Leu	Gly	Glu	Thr	Ser	Ala	Ser	Lys	Lys	Ser	Asn	Ser	Ser	Ser	Phe	Val
					35			40			45				
Leu	Ser	His	Arg	Ala	Ala	Ala	Gln	Arg	Ser	Cys	Ser	Gln	Pro	Ser	Thr
					50			55			60				

Ala

65

<210> 76

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> carboxyl-terminal tail of SPR

<400> 76

Asn	Pro	Ile	Ile	Tyr	Cys	Cys	Leu	Asn	Asp	Arg	Phe	Arg	Leu	Gly	Phe
1					5				10			15			
Lys	His	Ala	Phe	Arg	Cys	Cys	Pro	Phe	Ile	Ser	Ala	Gly	Asp	Tyr	Glu
					20			25			30				
Gly	Leu	Glu	Met	Lys	Ser	Thr	Arg	Tyr	Leu	Gln	Thr	Gln	Gly	Val	Tyr
					35			40			45				
Lys	Val	Ser	Arg	Leu	Glu	Thr	Thr	Ile	Ser	Thr	Val	Val	Gly	Ala	His
					50			55			60				
Glu	Glu	Glu	Pro	Glu	Gly	Pro	Lys	Ala	Thr	Pro	Ser	Ser	Leu	Lys	Leu
65					70			75			80				
Thr	Ser	Asn	Cys	Ser	Ser	Arg	Ser	Asp	Ser	Lys	Thr	Met	Thr	Glu	Ser
					85			90			95				
Phe	Ser	Phe	Ser	Ser	Asn	Val	Leu	Ser							
					100			105							

<210> 77

<211> 66

<212> PRT

<213> Artificial Sequence

<220>

<223> receptor mutant

<400> 77

Asn	Pro	Ile	Ile	Tyr	Cys	Cys	Leu	Asn	Asp	Arg	Phe	Arg	Leu	Gly	Phe
1					5				10			15			
Lys	His	Ala	Phe	Arg	Cys	Cys	Pro	Phe	Ile	Ser	Ala	Gly	Asp	Tyr	Glu
					20			25			30				
Gly	Leu	Glu	Met	Lys	Ser	Thr	Arg	Tyr	Leu	Gln	Thr	Gln	Gly	Val	Tyr

35	40	45
Lys Val Ser Arg Leu Glu Thr Thr Ile Ser Thr Val Val Gly Ala His		
50	55	60
Glu Glu		
65		

<210> 78
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

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<400> 78
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
      1           5           10          15
Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
      20          25          30
Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr
      35          40

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<210> 79
<211> 20
<212> PRT
<213> Artificial Sequence
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<220>
<223> receptor mutant

<400> 79
 Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
 1 5 10 15
 Lys His Ala Phe
 20

<210> 80
<211> 69
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

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<400> 80
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
      1           5           10           15
Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
      20          25          30
Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr Ala Ala Val Ala
      35          40          45
Ala Val Ser Arg Leu Glu Thr Thr Ile Ser Thr Val Val Gly Ala His
      50          55          60
Glu Glu Glu Pro Glu

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65

<210> 81
<211> 68
<212> PRT
<213> Artificial Sequence

<220>
<223> receptor mutant

<400> 81
Asn Pro Ile Ile Tyr Cys Cys Leu Asn Asp Arg Phe Arg Leu Gly Phe
1 5 10 15
Lys His Ala Phe Arg Cys Cys Pro Phe Ile Ser Ala Gly Asp Tyr Glu
20 25 30
Gly Leu Glu Met Lys Ser Thr Arg Tyr Leu Gln Thr Gln Gly Val Tyr
35 40 45
Lys Val Ser Arg Leu Glu Thr Thr Ile Ser Thr Val Ala Gly Ala Ala
50 55 60
Glu Glu Glu Pro
65

<210> 82
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid motif

<221> VARIANT
<222> 3, 4
<223> Xaa = Any Amino Acid

<400> 82
Asn Pro Xaa Xaa Tyr
1 5